CLAIMS

What is claimed is:

1. A tire building drum having an axis and a centerplane intersecting the axis, comprising:

a plurality of axially extending, circumferentially spaced-apart expanding segments, each of said expanding segments being expandable from a first radius in a collapsed condition of said drum to a second radius in an expanded condition of said drum;

a pair of flanges centered about the axis at a fixed distance from one another;

a plurality of ramp elements, each supporting an expanding segment, disposed between the flanges and radially moveable between the flanges;

at least one conical element disposed coaxially between the pair of flanges, axially moveable therebetween, and having a tapered face;

wherein the tapered face of the at least one conical element engages an inner surface of the ramp elements for forcing the expanding segments radially outward from the axis;

characterized in that:

there are two conical elements, each frustroconical, disposed coaxially with their bases facing each other; and

the inner surfaces of the ramp elements are V-shaped.

2. Tire building drum, according to claim 1, wherein when the conical elements move farther apart from one another, they urge the ramp elements radially outward from the axis.

3. Tire building drum, according to claim 1, further comprising:

in each flange, a first plurality of grooves disposed on an inner surface thereof and extending radially from the axis, for radially guiding the plurality of ramp elements.

4. Tire building drum, according to claim 1, further comprising:

a plurality of base members supporting a plurality of fixed segments;

in each flange, a second plurality of grooves for receiving opposite side edges of a the plurality of base members.

5. Tire building drum, according to claim 1, wherein:

the conical elements have notches at circumferential positions about the outer surface of their respective bases for receiving a bottom edge of the base member.

6. Tire building drum, according to claim 1, wherein:

the expanding segments, ramp elements, flange and conical elements are all located in

a center section of the drum.

7. Tire building drum, according to claim 1, wherein:

both of the two conical elements exerts a force on each of the ramp elements.

8. Tire building drum, according to claim 7, wherein:

the forces exerted by each of the two conical elements are symmetrical about the centerplane.

9. Tire building drum, according to claim 1, further comprising:

a plurality of fixed segments disposed between the plurality of expanding segments.

10. Tire building drum, according to claim 1, wherein:

end portions of the expanding segments are contoured to have pockets for receiving components of a tire carcass being laid up on the drum.

11. Tire building drum, according to claim 1, further comprising:

biasing members exerting a collapsing radial force on the ramp elements.

12. A tire building drum having an axis and a centerplane intersecting the axis, comprising:

a plurality of axially extending, circumferentially spaced-apart expanding segments, each of said expanding segments being expandable from a first radius in a collapsed condition of said drum to a second radius in an expanded condition of said drum;

a pair of flanges centered about the axis at a fixed distance from one another;

a plurality of support elements, each supporting an expanding segment, disposed between the flanges and radially moveable between the flanges;

characterized by:

a pair of guide rings disposed coaxially between the pair of flanges and axially moveable therebetween;

an overlapping linkage mechanism provided between the guide rings and the support element .

13. Tire building drum, according to claim 12, wherein the overlapping linkage mechanism comprises:

a first elongate link having a one end pivotally attached to a one of the guide rings and an opposite end pivotally attached adjacent a one end of the support element; and

a second elongate link having a one end pivotally attached to the other of the guide rings and an opposite end pivotally attached adjacent an opposite end of the support element.

14. Tire building drum, according to claim 12, wherein each of said links is movable between a generally axial position and a generally radial position to selectively expand and retract said expandable segments between an expanded position and a retracted position.

15. Tire building drum, according to claim 12, wherein when the guide rings move closer to one another, they urge the support elements radially outward from the axis.

16. Tire building drum, according to claim 12, further comprising:

in each flange, a first plurality of grooves disposed on an inner surface thereof and extending radially from the axis, for radially guiding the plurality of support elements.

17. Tire building drum, according to claim 12, wherein:

the expanding segments, support elements, flange and guide rings are all located in a center section of the drum.

18. Tire building drum, according to claim 12, wherein:

both of the two guide rings exerts a force on each of the support elements.

19. Tire building drum, according to claim 18, wherein:

the forces exerted by each of the two guide rings are symmetrical about the centerplane.

20. Tire building drum, according to claim 12, wherein:

end portions of the expanding segments are contoured to have pockets for receiving components of a tire carcass being laid up on the drum.